

## CLAIMS

[1] A barrel shift device for receiving input data having a predetermined bit width, shifting the input data to the right or left by a total shift amount obtained by combining a first shift amount and a second shift amount, and outputting the resultant data as output  
5 data after a desired shift, comprising:

a first shift section of receiving the input data, shifting the input data based on a first control signal for controlling the first shift amount, and outputting the resultant data as intermediate data;

10 an intermediate data holding section for holding the intermediate data from the first shift section;

a control signal holding section of holding and outputting a second control signal for controlling the second shift amount;

15 a second shift section of receiving the intermediate data held in the intermediate data holding section, shifting the received intermediate data based on the second control signal output from the control signal holding section, and outputting the resultant data as the output data after the desired shift; and

20 a decoding section of receiving the second control signal, and based on the second control signal, detecting digit positions in the intermediate data of data elements excluding the whole or a part of data elements other than data elements to be output as the output data after the desired shift from the second shift section, among all data elements constituting the intermediate data from the first shift section,

25 wherein the intermediate data holding section newly holds data elements at digit positions including at least the data elements to be output as the output data after the desired shift from the second shift section, excluding the whole or a part of data elements other than the data elements to be output as the output data after the desired shift from the second shift section, among the intermediate data, based on the digit positions detected by the decoding section.

[2] The barrel shift device of claim 1, wherein, based on all information indicated by the second control signal, the decoding section detects digit positions in the intermediate data of only the data elements to be output as the output data after the desired shift from the second shift section, among all the data elements constituting the intermediate data from the first shift section.

[3] The barrel shift device of claim 1, wherein, based on a part of information indicated by the second control signal, the decoding section detects digit positions in the intermediate data of data elements excluding a part of data elements other than the data elements to be output as the output data after the desired shift from the second shift section, among all the data elements constituting the intermediate data from the first shift section.

[4] The barrel shift device of claim 1, wherein  
the second control signal is a control signal including a multi-bit signal, and  
based on a predetermined 1-bit signal of the second control signal, the intermediate data holding section holds and outputs data elements at digit positions excluding a part of data elements other than the data elements to be output as the output data after the desired shift from the second shift section, among all the data elements constituting the intermediate data from the first shift section.

[5] A barrel shift device for receiving input data having a predetermined bit width, shifting the input data to the right or left by a total shift amount obtained by combining a first shift amount and a second shift amount, and outputting the resultant data as output data after a desired shift, comprising:

a first shift section of receiving the input data, shifting the input data based on a first control signal for controlling the first shift amount, and outputting the resultant data as

intermediate data;

an intermediate data holding section for holding the intermediate data from the first shift section;

5 a control signal holding section of holding and outputting a second control signal for controlling the second shift amount;

a second shift section of receiving the intermediate data held in the intermediate data holding section, shifting the received intermediate data based on the second control signal output from the control signal holding section, and outputting the resultant data as the output data after the desired shift; and

10 a decoding section of receiving the first control signal, and based on the first control signal, detecting digit positions of data elements in the input data, among all data elements constituting the intermediate data from the first shift section,

wherein the intermediate data holding section newly holds data elements at digit positions including at least the data elements included in the input data, among all the data elements constituting the intermediate data, based on the digit positions detected by the  
15 decoding section.

[6] The barrel shift device of claim 5, wherein, based on all information indicated by the first control signal, the decoding section detects digit positions in the intermediate data  
20 of only the data elements included in the input data, among all the data elements constituting the intermediate data from the first shift section.

[7] The barrel shift device of claim 5, wherein, based on a part of information indicated by the first control signal, the decoding section detects digit positions in the  
25 intermediate data of data elements excluding a part of data elements other than the data elements included in the input data, among all the data elements constituting the intermediate data from the first shift section.

[8] The barrel shift device of claim 5, wherein

the first control signal is a control signal including a multi-bit signal, and

based on a predetermined 1-bit signal of the first control signal, the intermediate

5 data holding section holds and outputs data elements at digit positions excluding a part of data elements other than the data elements included in the input data after shift process by first shift section, among all the data elements constituting the intermediate data from the first shift section.